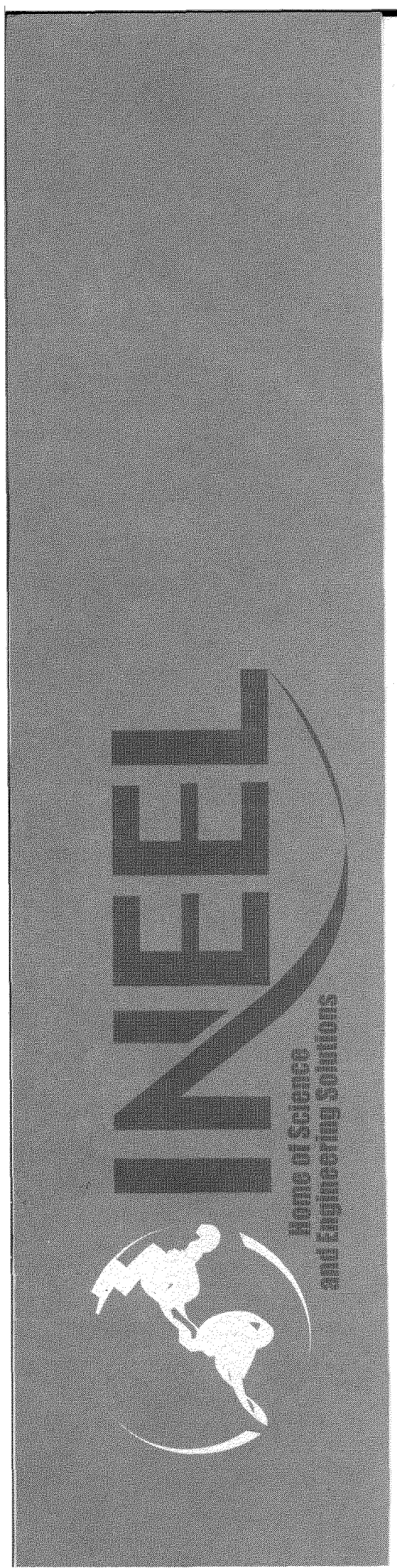
INEEL/EXT-02-00933
Revision 0



FY-2002 Annual Institutional Controls Inspection Report for the Test Reactor Area, Operable Units 2-13 and 2-14 (Final)

October 2002

Idaho National Engineering and Environmental Laboratory
Bechtel BWXT Idaho, LLC

INEEL/EXT-02-00933
Revision 0

FY-2002 Annual Institutional Controls Inspection Report for the Test Reactor Area, Operable Units 2-13 and 2-14 (Final)

October 2002

Idaho National Engineering and Environmental Laboratory
Environmental Restoration Program
Idaho Falls, Idaho 83415

Prepared for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
Contract DE-AC07-99ID13727

FY 2002 Institutional Controls Inspection Report for the Test Reactor Area, Operable Units 2-13 and 2-14 (Final)

INEEL/EXT-02-00933
Revision 0

October 2002

Approved by

Douglas H. Preussner
WAG-2 Project Engineer

11/21/02
Date

Robert E. James
WAG-2 Project Manager

11/21/02
Date

ABSTRACT

This Annual Institutional Controls Inspection Report provides and documents the inspection of the Operable Unit 2-13 and 2-14 Comprehensive Record of Decision and Explanation of Significant Differences-mandated institutional controls for sites that comprise Waste Area Group-2 (Test Reactor Area) at the Idaho National Engineering and Environmental Laboratory. The inspection and documentation of the condition of these institutional controls is required by the United States Environmental Protection Agency Region X and the State of Idaho Department of Environmental Quality. These activities were initially performed and reported within six months of the approval of, and as directed in, the Explanation of Significant Differences and have been completed on an annual basis since. As identified in the Explanation of Significant Differences, this report fulfills the annual inspection requirement.

CONTENTS

FIGURES

TABLES

ACRONYMS

ATR	Advanced Test Reactor
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFLUP	Comprehensive Facility and Land Use Plan
CFR	Code of Federal Regulations
DOE-ID	Department of Energy Idaho Operations Office
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
ETR	Engineering Test Reactor
FRG	final remediation goal
FY	fiscal year
GPRS	global positioning radiometric scanner
IDEQ	Idaho Department of Environmental Quality
INEEL	Idaho National Engineering and Environmental Laboratory
MCL	maximum contaminant level
MTR	Materials Test Reactor
O&M	operations and maintenance
OU	operable unit
PCB	polychlorinated biphenyl
PPM	parts per million
RI/FS	remedial investigation/feasibility study
ROD	Record of Decision
SLP	Sewage Leach Pond
SRPA	Snake River Plain Aquifer
TLD	thermo-luminescent dosimeter
TRA	Test Reactor Area

WAG	Waste Area Group
WWP	Warm Waste Pond

FY-2002 Annual Institutional Controls Inspection Report for the Test Reactor Area, Operable Units 2-13 and 2-14

1. INTRODUCTION

The purpose of this Annual Institutional Controls Inspection Report is to document the fiscal year (FY) 2002 inspections conducted for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites in Waste Area Group (WAG)-2, Operable Units (OU) 2-13 and OU 2-14 at the Idaho National Engineering and Environmental Laboratory (INEEL).

During a conference call between the Department of Energy Idaho Operations Office (DOE-ID), Environmental Protection Agency (EPA), and Idaho Department of Environmental Quality (IDEQ) on September 19, 2000, a consensus was reached that Operable Unit 2-13 does not require the preparation and submittal of an Annual Operations and Maintenance (O&M) Report. This decision was based upon the nature and scope of the remedial actions completed at the Test Reactor Area (TRA) and interpretation of the *Remedial Design and Remedial Action Guidance for the Idaho National Engineering Laboratory* (DOE-ID 1993). Instead of the O&M report, it was agreed that an institutional controls inspection report would fulfill the requirements to ensure that the remedies and institutional controls remain protective of human health and the environment. It was further agreed that these reports would be prepared and submitted on an annual basis for a period of not less than five years. This report represents the third (3^{rd}) such submittal of the Annual Institutional Controls Inspection Report for OU 2-13 under WAG-2. This report contains all elements as presented in the *Operations and Maintenance Plan for the Final Selected Remedies and Institutional Controls at Test Reactor Area, Operable Unit 2-13* (DOE-ID 2000a) (O&M Plan, Section 7). The preparation and submittal of future annual institutional controls inspection reports will be determined and documented in the Interim Five-year Remedy Review Report, scheduled for delivery to the agencies no later than December 21, 2002.

Subsequent to the signing of the Record of Decision (ROD) and Explanation of Significant Differences (ESD), five new sites have been identified at TRA. A new operable unit was created and these sites were placed into OU 2-14. Protective measures were implemented at these sites and inspections were performed in accordance with the requirements presented in the O&M Plan for OU 2-13.

2. BACKGROUND

2.1 INEEL/TRA Background

The INEEL is a government-owned/contractor-operated facility managed by the DOE-ID that is located 51 km (32 mi) west of Idaho Falls, Idaho (see Figure 2-1). The INEEL encompasses portions of five Idaho counties: (1) Butte, (2) Jefferson, (3) Bonneville, (4) Clark, and (5) Bingham, occupying 2,305 km^2 (890 mi^2) of the northeastern portion of the Eastern Snake River Plain (Figure 2-1).

The Test Reactor Area (TRA) was established in the early 1950s in the southwestern portion of what was then the National Reactor Testing Station, now the Idaho National Engineering and Environmental Laboratory (INEEL) for studying radiation effects on materials, fuels, and equipment. Three major reactors have been built at the TRA, including the Materials Test Reactor (MTR), the Engineering Test Reactor (ETR), and the Advanced Test Reactor (ATR). The ATR is currently the only major operating reactor at the INEEL.

Fifty-five (55) sites were evaluated under the Comprehensive Remedial Investigation/Feasibility Study (RI/FS) completed in February 1997. The results of the RI/FS provided sufficient data to warrant remedial action at eight (8) sites where remaining contamination concentrations presented unacceptable risks to human health and/or the environment. Remedial actions were evaluated and selected for each of these eight sites and formalized in the *Record of Decision, Test Reactor Area* (DOE-ID 1997). Remedial actions were performed at four of these sites in FY 1999. The *Remedial Action Report for the Test Reactor Area Operable Unit 2-13* (DOE-ID 2000b) contains the details of the remedial action work performed and completed. An engineered or native cover was placed over three of the four sites: the Warm Waste Pond Cells (TRA-03), the Chemical Waste Pond (TRA-06), and the Sewage Leach Pond (TRA-13). Follow-on inspections are required on these covers. Additionally the remediated Cold Waste Pond (TRA-08) required institutional controls to preserve the underlying RI/FS assumption of industrial land use only for a period of 100 years. The maintenance of these institutional controls will allow these sites to remain protective of human health and welfare and the environment, until such time that residual contamination reaches acceptable levels to allow for the three site's unrestricted use. A limited action remedy was selected for the soil surrounding the hot waste tanks at Building TRA-613 (TRA-15) and for the Sewage Leach Pond Berm / Soil Contamination Area. Additional institutional controls identified for TRA-15 include the restriction of land use at depths greater than 3 m (10 ft) until a risk evaluation of these soils can be performed. Limited action with implementation of a contingent excavation and disposal option was selected as the remedy for the soil surrounding Tanks 1 and 2 at Building TRA-630 (TRA-19) and the Brass Cap Area. The retained OU 2-13 CERCLA sites that require institutional controls are shown on Figure 2-2.

Also, based upon the results of the RI/FS, the remaining 47 sites evaluated were identified as "no action" sites in the ROD. These sites were determined to not pose unacceptable risks to human health and the environment. For seven of these sites, these determinations were based upon assumptions that no change with regards to land use or exposure routes would be allowed to occur at these sites. The ROD stated that for those sites where "no action" would be taken, based on land use assumptions, those assumptions would be reviewed as part of the Five-Year Remedy Review. Therefore, these seven sites also require institutional controls to preserve the underlying assumptions of the RI/FS and ROD. The seven sites include the polychlorinated biphenyl (PCB) spills at TRA-619, -626, and -653; the TRA Warm Waste Retention Basin (TRA-712) to control sediments below 3 m (10 ft); the TRA North Storage Area; the Hot Tree site; and the Snake River Plain Aquifer/Perched Water System.

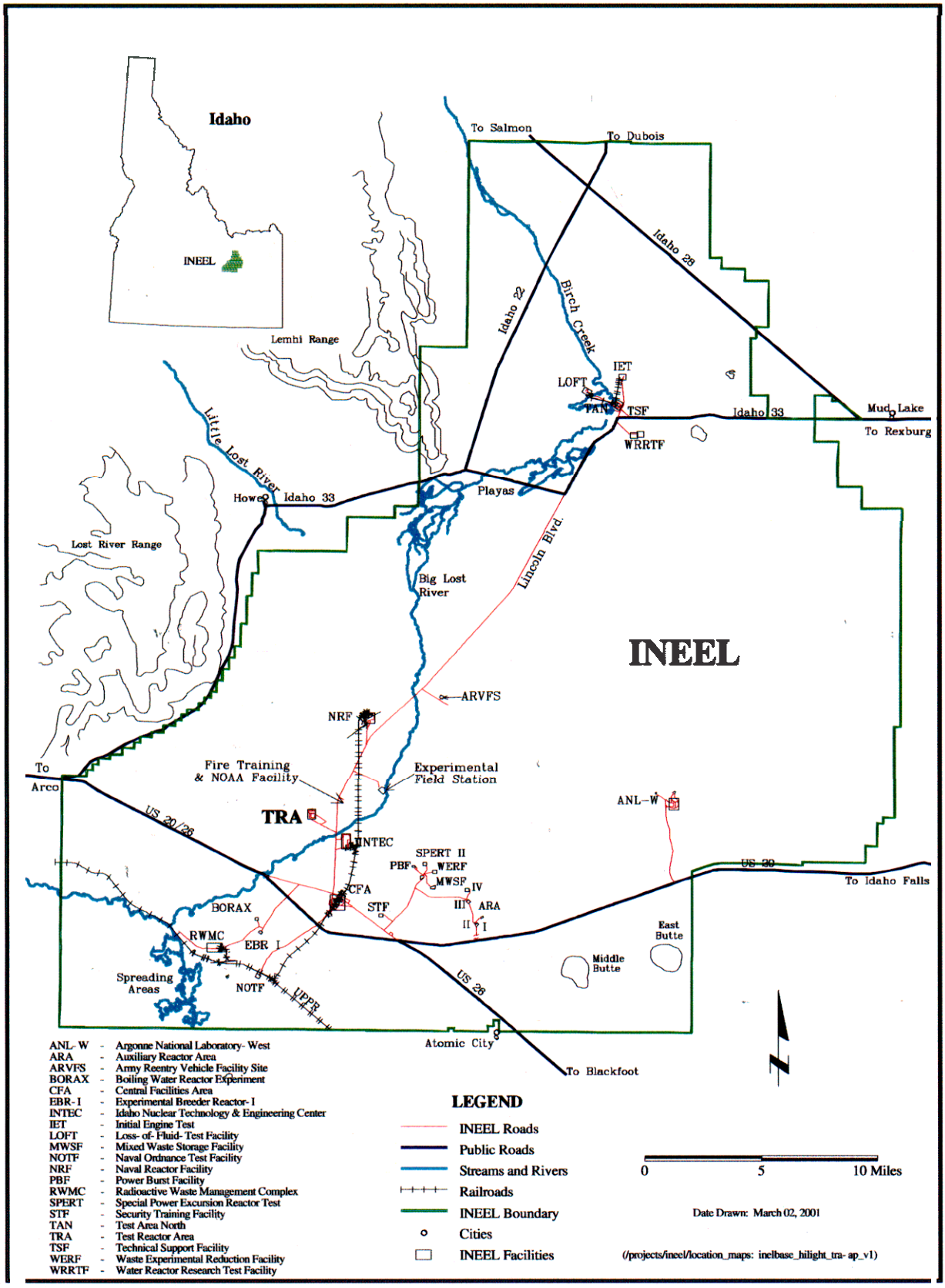


Figure 2-1. The Idaho National Engineering and Environmental Laboratory.

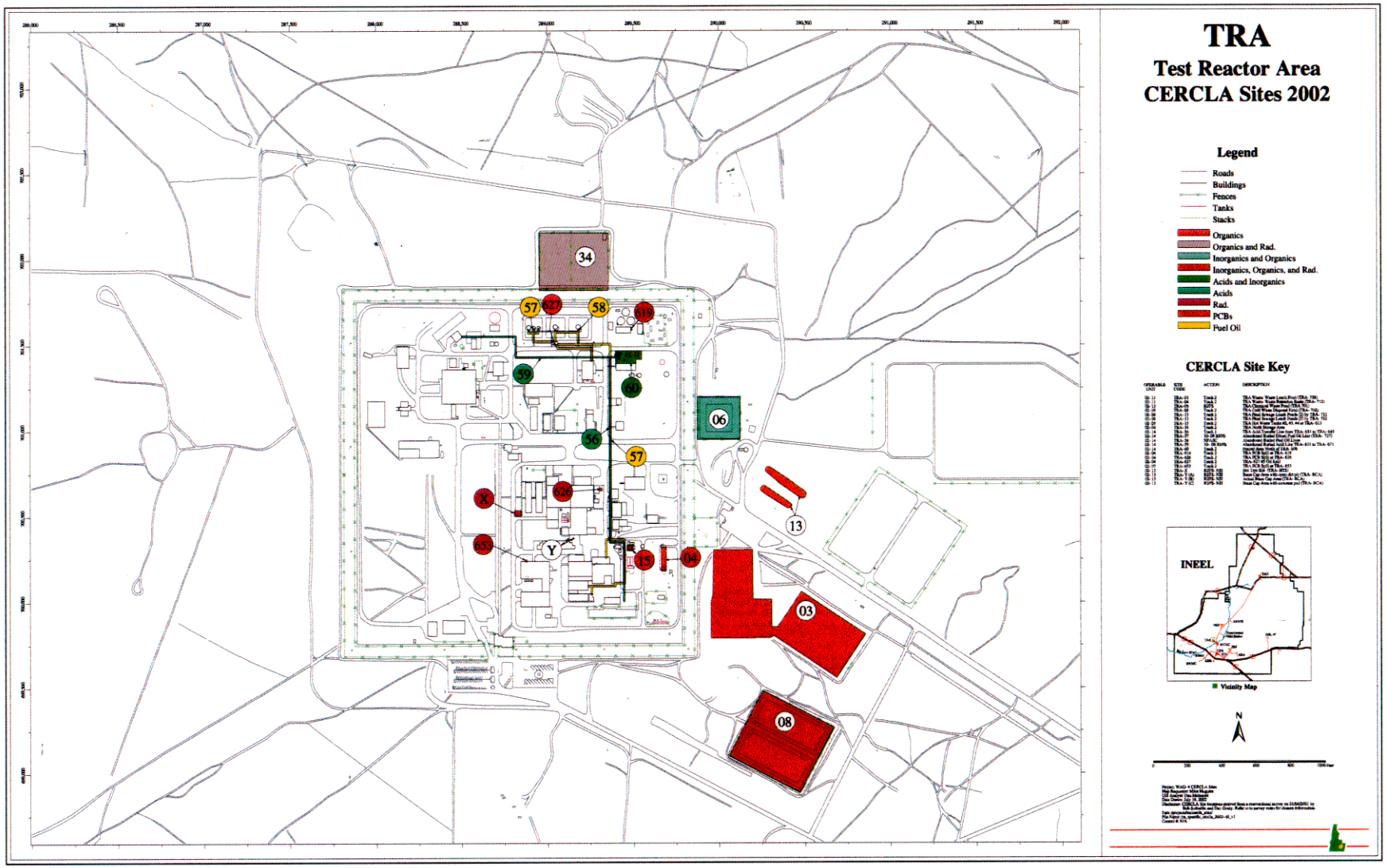


Figure 2-2. Retained OU 2-13 and OU 2-14 CERCLA sites that require institutional controls.

An *Explanation of Significant Differences* (ESD) (DOE/ID 2000) to the ROD, for TRA OU 2-13, was approved in May 2000. The purpose of the ESD was to identify and document additional institutional controls determined to be necessary to protect human health and the environment at the fifteen (15) sites retained under OU 2-13 at TRA. The ROD lacked details on the site-specific institutional controls including the geographic locations where institutional controls were required, the object of the control or restriction, and a description of the types of restrictions. The ROD did not discuss how these institutional controls would be implemented, maintained, and monitored while the DOE had control of the property as well as when the property was transferred to other federal ownership or private ownership, should that occur. The ESD clarified the institutional control requirements for individual sites and established the requirement for how the DOE would implement, maintain, and monitor these site-specific institutional controls.

Additionally, five (5) new sites identified since the ROD and subsequent ESD were signed are included in this report. These sites include TRA-56, Acid Transfer Line from TRA-631 to TRA-645; TRA-57, Abandoned Buried Diesel Fuel Line from TRA-727 and TRA-775 to ETR; TRA-58, Abandoned Buried Fuel Oil Lines (4) from TRA-727 to TRA-609; TRA-59, Abandoned Buried Acid Line from TRA-631 to TRA-671; and TRA-60, Fenced Area North of TRA-608. The retained OU 2-14 CERCLA sites that require protective measures are shown on Figure 2-2.

The implementation of ICs for these sites is consistent with the *EPA Region 10 Policy on the Use of Institutional Controls at Federal Facilities* (EPA 1999). These ICs are also consistent with the CERCLA requirement that when waste is left in place above concentration levels which do not allow for unlimited use and unrestricted exposure, appropriate controls must be in place to limit exposure and maintain the acceptable levels of risk established either through successful completion of remedial actions or risk assessments.

At the conclusion of fiscal year 2002 (September 30, 2002), all continuing responsibilities for the performance of Site Maintenance and Implementation of the Operations and Maintenance Plan will be transferred to the Environmental Restoration Long-Term Stewardship Program. Subsequent Annual Institutional Controls Inspection Report will be prepared and submitted by that organization.

2.2 INEEL Comprehensive Facility and Land Use Plan

The *INEEL Comprehensive Facility and Land Use Plan (CFLUP)* (DOE-ID 1997a) documents and displays current and anticipated future land use and facility use at the INEEL. It provides guidance on facility and land use at the INEEL through the 100-year scenario, which will be explained below. The CFLUP is updated, as needed, when information such as land use changes and includes specific land use information about the TRA facility.

Land use projections in the INEEL CFLUP incorporate the assumption that the INEEL will remain under government management and control until at least the year 2095. A mix of land uses across the INEEL is anticipated to include unrestricted industrial uses, government-controlled industrial uses, unrestricted areas, controlled areas for wildlife management and conservation, and waste management areas. No residential development will be allowed within INEEL boundaries, and no new major private developments (residential or nonresidential) on public lands are expected in areas adjacent to the Site. Grazing will be allowed to continue in the buffer area. The survey data for the OU 2-13 CERCLA sites have been recorded and submitted for incorporation into the CFLUP.

3. INSPECTION

The inspections of the institutional controls at the fifteen (15) sites, under OU 2-13, were conducted as specified in the ROD and ESD. The inspections of the protective measures at the five (5) OU 2-14 sites were also conducted using the criteria specified in the ROD and ESD and are consistent with the *EPA Region X Policy on the Use of Institutional Controls at Federal Facilities* (EPA 1999).

Two members of the project support staff performed the inspections on June 26, 2002. The results of the inspections of all twenty (20) sites are presented in Section 4.0. No deficiencies were noted at any of the twenty sites. A list and description of these sites are presented in Tables 3-1 through 3-3.

An Institutional Controls Inspection Report Questionnaire summarizing the findings of the inspections is included as Appendix A. A Site Inspection Form, CERCLA Institutional Control Site, was used to record the results of the inspections for each of the sites inspected. These completed forms are included as Appendix D. Inspections of the Warm Waste Pond, Chemical Leach Pond and Soil Contamination Area were conducted in accordance with the requirements identified in the *Operations and Maintenance Plan for the Final Selected Remedies and Institutional Controls at Test Reactor Area, Operable Unit 2-13.* Completed Inspection Report Forms for the remediated sites are included as Appendix E.

The identified institutional controls for the perched water table and the Snake River Plain Aquifer (SRPA) include conducting groundwater monitoring activities on a semi-annual basis. The results of the semi-annual groundwater monitoring activities performed during this past year are being compiled and will be presented in the Annual Groundwater Monitoring Report for TRA that is scheduled for completion in September 2002.

3.1 FY 2002 Maintenance Activities

Maintenance activities at the CERCLA sites for FY 2002 consisted of changing the telephone numbers of the point of contact on each of the institutional control signs. It was noted during the inspections that the re-vegetation efforts conducted at the Chemical Waste Pond and the Sewage Leach Pond/Sewage Contamination Area during FY 2002 have not produced the desired results. An evaluation of these areas has been performed and a "no action at this time" determination was made. These areas will be re-evaluated during FY 2003 and re-vegetated if determined to be appropriate.

3.2 FY 2003 Maintenance Activities

During fiscal year 2003, the Environmental Restoration Long-Term Stewardship will have responsibility for the performance of Site Maintenance and Implementation of the Operations and Maintenance Plan. Subsequent Annual Institutional Controls Inspection Reports will be prepared and submitted by that organization.

3.3 Assessment of Engineered Cover

A visual perimeter walk-around inspection of the Warm Waste Pond's engineered cover to look for subsidence in the engineered cover and animal intrusions was required by the O&M Plan. The O&M Plan also required visual signs and barriers that restrict personnel access to the site.

The visual perimeter walk-around was performed at the Warm Waste Pond during the initial inspection. There were no visible signs of either subsidence in the engineered cover or animal intrusions.

Additionally, during the visual inspection of the Warm Waste Pond significant native plant (green rabbitbrush) and grass species were observed to be present on the cap. The required signs and barriers are in place and detailed in Section 4.

Table 3-1. Sites with remedies requiring Institutional Controls.[a]

Site Code	Site Name	ROD Selected Remedy	Basis for Institutional Controls[b]	Institutional Controls[c]
TRA-03	TRA Warm Waste Pond (Sediments)	Containment with an engineered soil cover and institutional controls	Containment barrier has been put in place. Current occupational risk is 2E-02. 100-year future residential risk is >1E-04.	Restrict site to occupational access for more than 30 years and restrict to industrial land use only until residential risk is <1E-04 based on the results of a five-year review.
TRA-06	TRA Chemical Waste Pond (TRA-701)	Containment with a native soil cover and institutional controls	Native soil cover is in place. Hazard quotient is greater than 1 for mercury via homegrown produce ingestion and soil ingestion at a depth of 14 feet.	Industrial land use is unrestricted. Restrict residential land use to depths less than 14 feet.
TRA-08	TRA Cold Waste Disposal Pond (TRA-702)	Excavation and disposal	Soil excavated and disposed of to 1E-04 future residential risk cleanup levels.	Restrict site to industrial land use for less than 100 years until residential risk is <1E-04 based on the results of a five-year review.
TRA-13	TRA Sewage Leach Ponds (2) by TRA-732	Containment with a native soil cover and institutional controls	Containment barrier has been put in place. Current occupational risk is 1E-03 for Cs-137 and Ag-108. 100-year residential risk is 5E-04 at a depth of 14 feet. The hazard quotient is greater than 1 for mercury and zinc via homegrown produce ingestion.	Restrict site to occupational access for more than 30 years and restrict to industrial land use only until residential risk is <1E-04 based on the results of a five-year review.
TRA-15	TRA Hot Waste Tanks 2, 3, and 4 at TRA-613 (TRA 713-B, 713-C, and 713-D)	Limited action	Tanks are still in use. Current occupational risk is 3E-04. 100-year future residential risk is 1E-04. Additional contaminated soils are greater than 13 feet deep to basalt at 37 feet. Risk assessment is not done at this depth.	Restrict occupational access for less than 100 years until risk is <1E-04 based on a five-year review. After the above restriction is removed, restrict land use at depths greater than 10 feet until otherwise evaluated.

Table 3-1. (continued).

Site Code	Site Name	ROD Selected Remedy	Basis for Institutional Controls[b]	Institutional Controls[c]
TRA-19	TRA Rad Tanks 1 and 4 at TRA-630, replaced by Tanks 1, 2, 3, and 4 (TRA 730-1, 730-2, 730-3, and 730-4)	Limited action with implementation of a contingent excavation and disposal option	New tanks are still in use. Current occupational risk is 2E-01 for Cs-137. 100-year residential risk is 8E-02.	Restrict occupational access and prohibit residential development until soil is removed or status is changed in a five-year review.
None	Sewage Leach Pond Soil Contamination Area	Limited action	2E-04 is the current occupational risk; 30-year occupational risk and 100-year residential risk are < 1E-04.	Restrict occupational access until risk is <1E-04 based on the results of a five-year review.
None	Brass Cap Area	Limited action with implementation of a contingent excavation and disposal option	3E-01 is the current occupational risk and 8E-02 is the 30-year future occupational risk. 8E-02 is the 100-year future residential risk.	Restrict occupational access and prohibit residential development until removed or status is changed in a five-year review.

a. Source of information is DOE-ID 2000c.

b. With the exception of TRA-08, all risks are preremediation risks developed in the baseline risk assessment (DOE-ID 1997b).

c. Timeframes are approximate. Duration of controls will be based on acceptable levels or risk.

Table 3-2. No Action Sites requiring Institutional Controls[a].

Site Code	Site Name	ROD Selected Remedy	Basis for Institutional Controls[a]	Institutional Controls
None	TRA PCB spill at TRA-619	"No action"	22 parts per million (PPM) PCBs in soil under pad, which is below the 25 PPM for restricted industrial areas and greater than the 10 PPM for general nonrestricted use (40 CFR 761.125[c][4]). 2.9E-05 residential risk. Track 2 No Further Action.	Restrict this site to industrial land use only to preserve industrial only land use assumption.
None	TRA PCB spill at TRA-626	"No action"	24 PPM PCBs in soil >4 feet deep, which is below the 25 PPM for restricted industrial areas and greater than the 10 PPM for general nonrestricted use (40 CFR 761.125[c][4]). 3.6E-05 residential risk. Track 2 No Further Action.	Restrict this site to industrial land use only to preserve industrial only land use assumption.
None	TRA PCB spill at TRA-653	"No action"	PCBs $\leq$25ppm in soil, which is below the 25 PPM for restricted industrial areas and greater than the 10 PPM for general nonrestricted use (40 CFR 761.125[c][4]). 1.3E-05 residential risk. Track 2 No Further Action.	Restrict this site to industrial land use only to preserve industrial only land use assumption.
TRA-04	TRA Warm Waste Retention Basin, surficial sediments (TRA-712)	"No action"	5E-04 current residential risk for 10 ft and less. Risk evaluation not done for contamination at 40-ft depth.	Restrict site to industrial use only for less than 10 feet deep. Restrict land use for deeper contamination until otherwise evaluated.

Table 3-2. (continued).

Site Code	Site Name	ROD Selected Remedy	Basis for Institutional Controls[a]	Institutional Controls
TRA-34	TRA North Storage Area	"No action"	3.5E-05 100-year residential risk. 1.2E-04 current residential risk for Ag-108m, Cs-137, and Eu-152.	Restrict land use to industrial until risk is less than E-04 based on a 5-year review.
None	Hot Tree Site	"No action"	2E-04 current residential risk from Cs-137. 2E-05 risk after 100 years.	Restrict site to industrial land use only for approximately 30 years until residential risk is less than E-04 based on the results of a 5-year review.
None	Perched Water and Snake River Plain Aquifer Groundwater	"No action with monitoring"	Cr and tritium concentrations are greater than maximum contaminant levels (MCLs) and are predicted to decrease below MCLs within 20 years.	Restrict drilling of wells for drinking water usage until contaminants are below MCLs based on the results of a 5-year review.

a. Source of information is DOE-ID 2000c.

CFR = Code of Federal Regulations.

PCB = Polychlorinated Biphenols

Table 3-3. New Sites under OU 2-14 requiring Protective Measures

Site Code	Site Name	ROD Selected Remedy	Basis for Protective Measure	Protective Measures
TRA-56	Abandoned Acid Line (TRA-631 to TRA-645)	N/A	EPA-Region X Policy Use of Institutional Controls at Federal Facilities (EPA 1999).	Restrict all access until evaluated under a future Record of Decision.
TRA-57	Abandoned Buried Diesel Fuel Line (TRA-727 & -775 to ETR)	N/A	EPA-Region X Policy Use of Institutional Controls at Federal Facilities (EPA 1999).	Restrict all access until evaluated under a future Record of Decision.
TRA-58	Abandoned Buried Fuel Oil Lines (4) (TRA-727 to TRA-609)	N/A	EPA-Region X Policy Use of Institutional Controls at Federal Facilities (EPA 1999).	Restrict all access until evaluated under a future Record of Decision.
TRA-59	Abandoned Buried Acid Line (TRA-631 to TRA-671)	N/A	EPA-Region X Policy Use of Institutional Controls at Federal Facilities (EPA 1999).	Restrict all access until evaluated under a future Record of Decision.
TRA-60	Fenced Area North of TRA-608	N/A	EPA-Region X Policy Use of Institutional Controls at Federal Facilities (EPA 1999).	Restrict all access until evaluated under a future Record of Decision.

a. Source of information is DOE-ID 2000c.

3.4 Assessment of Native Covers

The native covers on the Chemical Waste Pond, the Sewage Leach Pond, and Sewage Leach Pond Contamination areas were inspected on June 26, 2002. The SLP/SCA was re-seeded with native vegetation in the Fall of 2001. During this inspection, it was noted that re-growth of native vegetation on each of the covers was sparse. Additionally, no signs of surface erosion were observed, probably due to the relatively high growth of weeds.

3.5 Radiological Monitoring

The Operations and Maintenance Plan for the Final Selected Remedies and Institutional Controls at Test Reactor Area, Operable Unit 2-13 (DOE-ID 2000) requires that radiological monitoring of the Test Reactor Area (TRA)-03 Warm Waste Pond boundary and the TRA-13 Sewage Leach Pond (SLP) cover and boundary be conducted on an annual basis to identify potential contaminant migration and to ensure that existing institutional controls are protective of occupational exposure. During the initial survey in 2000, routine environmental monitoring gamma ray measurements using a vehicle-mounted scintillation detector (Global Positioning Radiometric Scanner [GPRS]), showed elevated count rates along the west border of the WWP that borders the east fence line of the TRA facility. As documented in the 2001 radiation survey, high-activity waste from TRA operations is stored in the Box yard Storage Area inside the TRA facility, near the Warm Waste Pond area. The results from the 2001 survey and those from high resolution gamma spectrometry measurements were previously reported in EDF-ER-309 (INEEL 2001).

Based on the results of the initial survey in 2000, permanent markers were placed along the western border of the WWP at predetermined locations for making "in-situ" gamma-ray spectroscopy measurements to allow for repeated measurements on an annual basis at the same locations. These locations were marked based on the GPRS survey results in 2000 and 2001, and the fact that there is a radioactive waste storage area inside the TRA facility adjacent to the western border of the WWP. The GPRS survey results and the "in-situ" HPGe measurements allow for comparisons from one year to the next to assess the radiation levels at the TRA WWP and SLP. This EDF presents the results of the 2002 annual radiation surveys at the TRA-03 WWP and the TRA-13 SLP.

3.5.1 Field Screening Measurements

The screening measurements used for this survey are similar to those that have been used at other INEEL sites. The first type of measurements used at this site included drive-over measurements. The system used was a GPRS mounted on the front of a 4-wheel drive vehicle. The GPRS system was used to locate and document areas of high-gamma activity. The GPRS detection system consists of two large plastic scintillator detectors, which measure only gross counts-per-second. The system records the gross counts-per-second data and the associated geographical coordinates in memory. The data can then be processed using commercially available mapping software to produce contour maps of radiation levels for the surveyed areas.

The GPRS was used to collect gross count rate data around the perimeter of TRA-02 Warm Waste Pond and around the perimeter and on the surface of the cover of TRA-13 Sewage Leach Pond.

3.5.2 High Resolution Germanium Detector Measurements

The second system used for this field measurement effort consisted of a 65 percent efficient high purity germanium detector mounted 1 m (3 ft) above the ground on a tripod. A portable multi-channel analyzer (ORTEC DIGIDART) system was coupled to the detector, and the system was controlled by a Panasonic CF47 laptop computer system. The height of the detector above the ground, 1 m (3 ft).

facilitates an un-collimated field of view approximately 20 m (66 ft) in diameter. In addition, a 1.0-in. thick collimator (detector recess was 1.0 in.) was added to shield this detector from possible shine, or background radiation, emanating from the TRA Box yard Storage area. By performing measurements with detector collimated and un-collimated near the WWP, we can determine whether the source of the high-count rates emanates from the hot waste storage area or the ground surface. The collimated/un-collimated measurements were performed at 10 points in the WWP area. In the in-situ gamma ray measurement method, the gamma-emitting nuclides are identified by their specific photon energies, which are registered as spectral peaks. The peak count rate is related to the full absorption of un-scattered gammas. If the detector is properly calibrated, the activities per unit mass of any isotope can be derived from the peak count rate using parameters that describe the soil characteristics (density, etc.) and the depth profile of the distribution. The in-situ technique is particularly well suited for studies such as this because it quickly determines levels and type of contamination over large areas. Each measurement provides a weighted average over the detector field of view that is on the order of many square meters. The use of collimated and un-collimated measurements, near the boundary fence, with the TRA waste box area, allowed for determination of whether the source of the high-count rate seen in the drive-over measurements is specifically due to shine emanating from stored waste at the TRA waste box area. Prior to starting the fieldwork, an energy calibration was performed on the high purity germanium detector at the Idaho Nuclear Technology and Engineering Center Gamma Spectrometry Laboratory. Field counts were taken for 600 and 7,200 seconds real time.

3.5.3 Results and Discussion

3.5.3.1 GPRS Survey Results. The GPRS was used to perform a survey around the perimeters of the WWP and the SLP covers; additionally, a survey of the entire surface of the SLP cover was performed. The initial GPRS survey performed on May 20, 2002, revealed an anomaly in the observed gross count rates on the northern portion of the SLP cover; however, subsequent to the analysis of the data it was discovered that the radiation detection system on the GPRS had faulty components that led to collection of erroneous gross count rate data. As a result, the GPRS radiation detection system was repaired and recalibrated by the manufacturer and the WWP and SLP surveys were redone. The GPRS system was also re-calibrated by appropriate INEEL personnel following the vendor repairs. The results of the July 8, 2002, surveys are shown in Figures 3-1 and 3-2.

The results of the GPRS survey shown in Figures 3-1 and 3-2 are consistent with the survey results from the 2000 and 2001 radiation surveys. Once again, the western boundary of the WWP shows consistently higher count rates relative to the rest of the WWP boundary. The GPRS survey results for the SLP did not reveal any unexpected elevated count rates.

3.5.3.2 HPGe Measurement Results. Appendix A shows the raw data acquired from the ten WWP points. Where the letters "UC" follow the point descriptor indicates that a measurement with the detector collimator removed was acquired at that location. Points with an "L" designator are those at which longer counts were performed. In addition, eastings, northings, total sum of counts, and the actual analyzer live-time are shown at each measurement point. The isotopes of concern are shown in Appendix B and include Cs-137, Cs-134, Ag-108m, Am-241, Eu-152, Eu-154, Eu-155, Co-60, and Ir-192. Within the spreadsheet, the numbers shown in blue text are values for which the software calculated a less than minimum detectable activity (less than MDA) value using the standard Currie equation. In addition, the most prominent gamma ray count rate for each isotope is shown along with the one-sigma uncertainty for that particular count rate. At points WWP-8 and WWP-9, longer (2-hour) counts were taken to verify the counting statistics obtained with the 600-second measurements were acceptable as indicated by the good agreement between the 1-sigma uncertainties listed for the 600 and 7200-second counts.

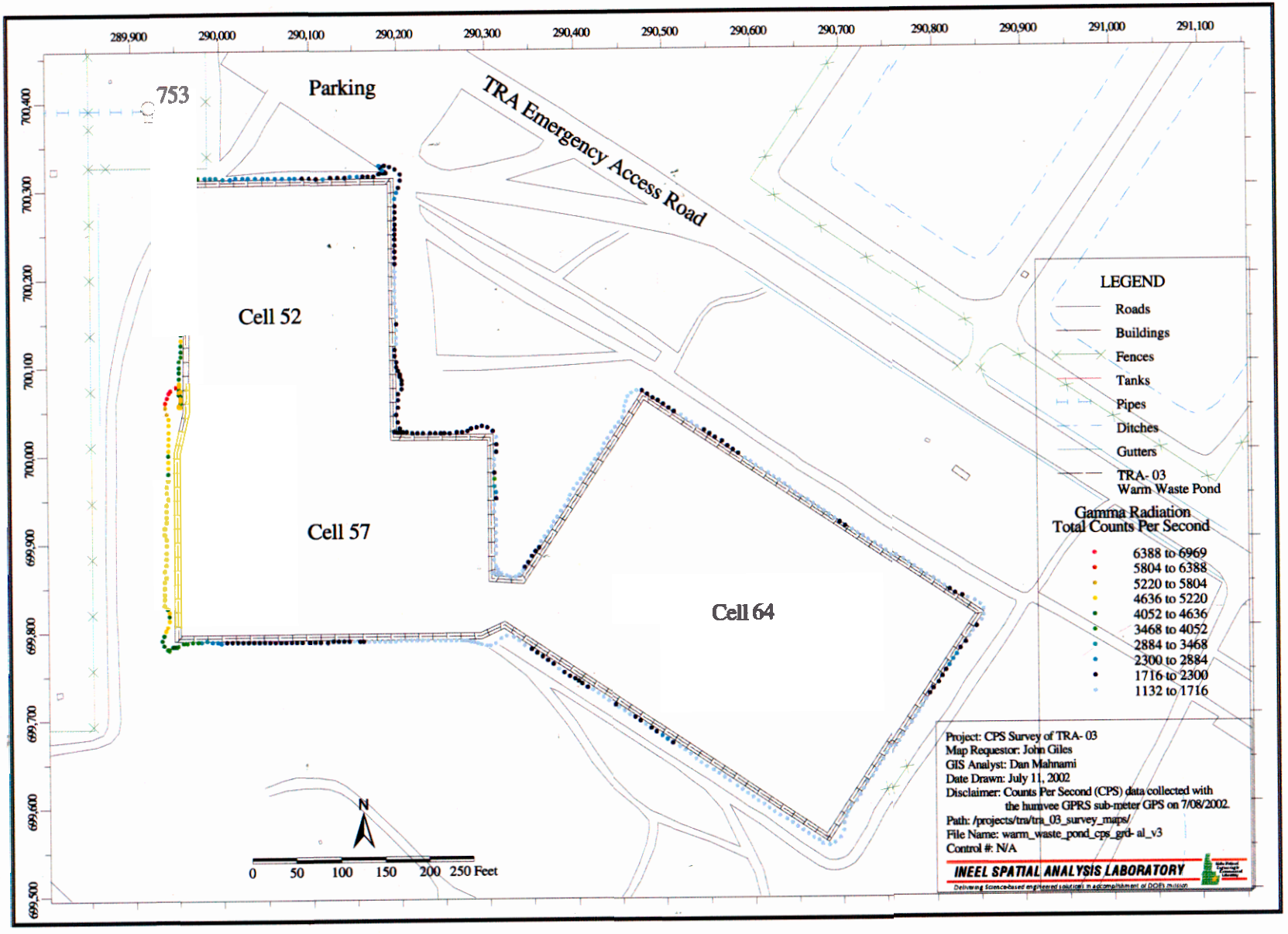


Figure 3-1. CY 2002 GPRS radiation survey results at TRA-03 Warm Waste Pond.

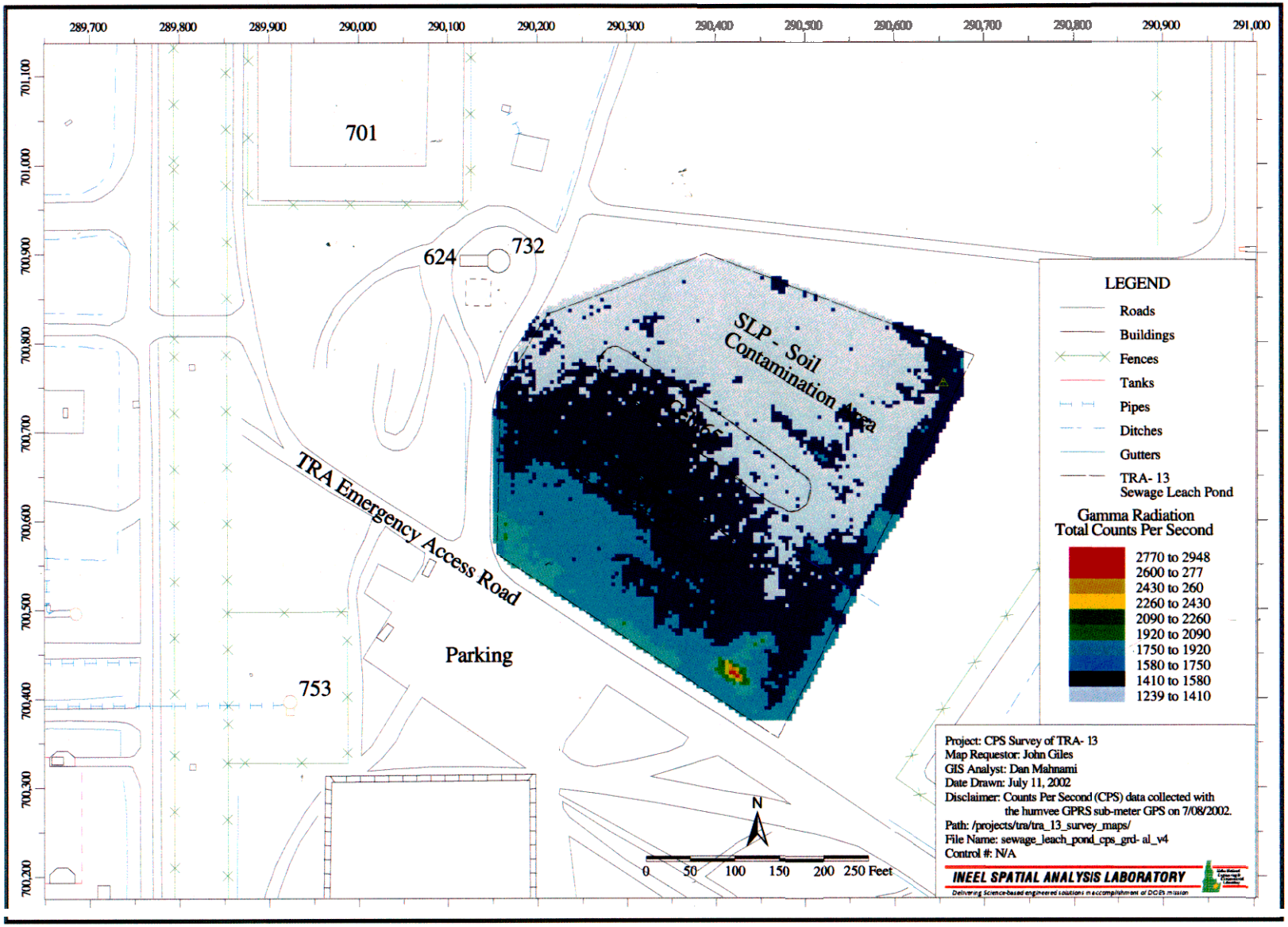


Figure 3-2. CY 2002 GPRS radiation survey at TRA-13 Sewage Leach Pond.

Table 3-4 indicates that the overall counts-per-second ratios (un-collimated/collimated) are consistent between short and long counts at two locations. This confirms the validity of the shorter counts and indicates that the source of the higher count rate data in the un-collimated measurements is the stored materials and radioactive waste at the box yard storage area. Table 3-4 also shows a consistent increase in both the collimated and un-collimated gross count rates at points 6-9. This trend of increasing count rates at these specific locations is consistent with what was reported in EDF-ER-309. Figure 3-3 below shows the distribution of the count rate data for 2002 along the western border of the WWP.

Table 3-4. Year 2002 summary results at WWP boundary.

Point	Livetime Sec	Sum	Gross CPS
WWP2-C	578	505888	875.2
WWP3-C	573.8	676468	1178.9
WWP4-C	570.8	749109	1312.4
WWP5-C	568.7	771803	1357.1
WWP6-C	565.3	854907	1512.3
WWP7-C	565.8	857169	1515.0
WWP-8-C	565.8	876256	1548.7
WWP9-C	533.3	867686	1627.0
WWP10-C	564.5	863441	1529.6
WWP11-C	571.9	726046	1269.5
		MEAN-C	1372.6
WWP2-UC	493.9	2580000	5223.7
WWP3-UC	463	2920000	6306.7
WWP4-UC	460.46	3240000	7036.4
WWP5-UC	454.42	3370000	7416.0
WWP6-UC	439.1	3670000	8358.0
WWP7-UC	443.7	3590000	8091.1
WWP8-UC	440.6	3610000	8193.4
WWP9-UC	444.3	3590000	8080.1
WWP10-UC	449.9	3470000	7712.8
WWP11-UC	464	3160000	6810.3
		MEAN-UC	**7322.9**
		RATIO UC/C	**5.3**
WWP8-C-L	6681	10470000	1567.1
WWP8-UC-L	5371	40610000	7561.0
		RATIO UC/C	**4.8**
WWP9-C-L	5064	7807000	1541.7
WWP9-UC-L	3886.5	31670000	8148.7
		RATIO UC/C	**5.3**

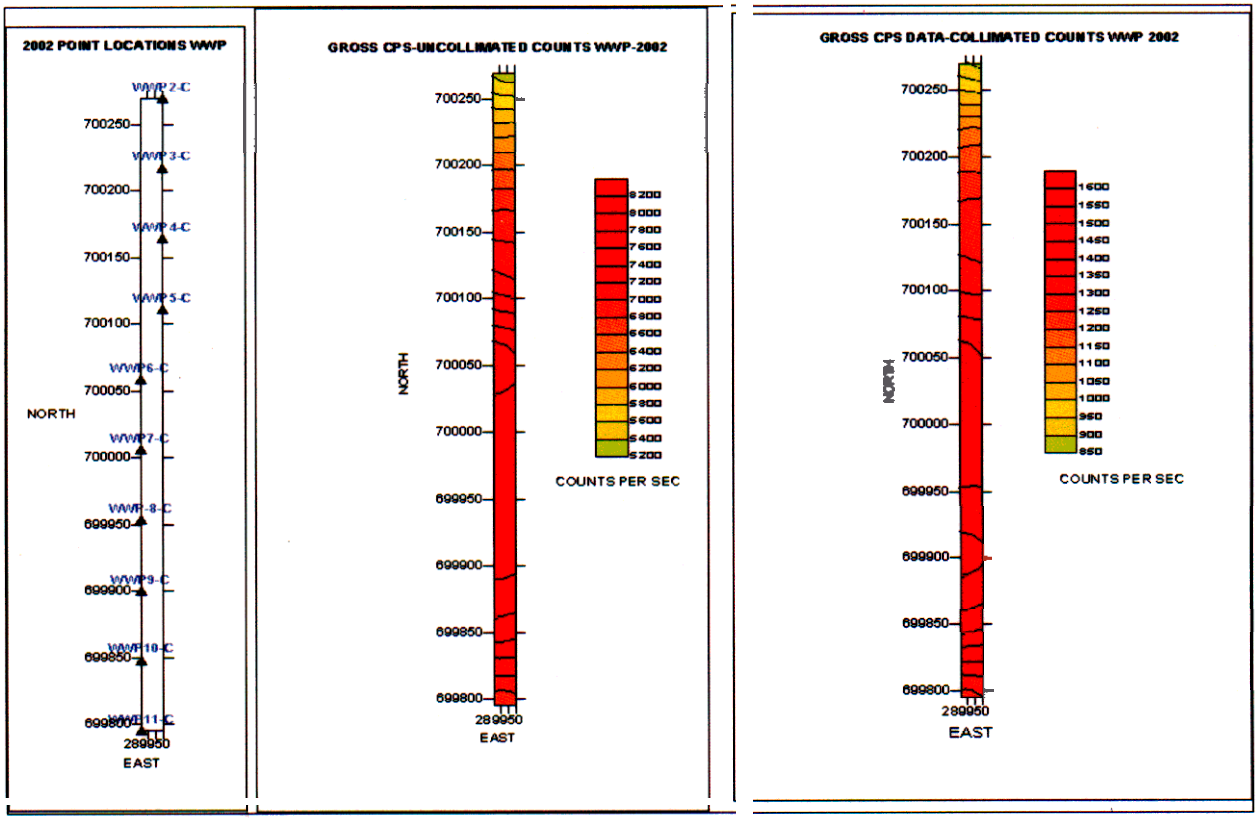


Figure 3-3. Measurement points and counts-per-second data at WWP for 2002.

Comparison of years 2001 and 2002 data indicate an increase in the Co-60 concentration from 2001. This increase is shown in table 2: (all values in pCi/g)

Table 3-5. Comparison of 2001 and 2002 Co-60 data.

Year	Mean Co-60 Concentrations, pCi/g (collimated)	Mean Co-60 Concentrations, pCi/g (un-collimated)
2001	0.3	0.4
2002	3.6	9.8

The increase in the Co-60 is likely due to waste storage and handling activities at the TRA waste storage site.

Examination of other isotopic data in Appendix A shows no major changes from 2001. The major positive detects in 2002 were Cs-137 and the Eu isotopes. In all cases, these isotopes measured below any levels of concern.

4. INSTITUTIONAL CONTROLS

Access to the INEEL and specifically to TRA is controlled through the main security gate and TRA. Security personnel at the INEEL require physical observation of badges to access the area. At TRA, security personnel inspect badges and training cards to determine if access is allowed or whether escorts are required.

The Warm Waste Pond, Chemical Waste Pond, Cold Waste Disposal Pond, and the Sewage Leach Pond/Sewage Leach Pond Soil Contamination Area are located outside the TRA security fence; however, they are within the main INEEL area. The remaining sites are all located within the TRA security fence.

The required individual institutional controls were observed at each of the following sites:

OU 2-13 Sites

- **TRA-03**—TRA Warm Waste Pond
  - Brass corner markers
  - 18 Aluminum signs 0.5 by 0.6 m (1.5 by 2 ft) with "INEEL OU 2-13 WAG 2, Warm Waste Pond, KEEP OUT"
  - Four granite markers 0.9 by 1.2 by 3 m (3 by 4 by 10 ft) with pictures indicating (1) no walking, (2) poison, and (3) radioactivity, and (4) imbedded brass corner marker on the top
  - "Caution RAD Area" signs posted in multiple locations
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"
- **TRA-04**—TRA Warm Waste Retention Basin, Surficial sediments
  - "Caution RAD Area" sign
  - Locked Building entrance
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"
- **TRA-06**—TRA Chemical Waste Pond
  - 8 Aluminum signs 0.5 by 0.6 m (1.5 by 2 ft) with "INEEL OU 2-13 WAG 2, Chemical Waste Pond, KEEP OUT"

- Brass corner markers
- Warning sign with the following:
  - Waste Site Number
  - Point of Contact with phone number
  - "Do Not Disturb"

- **TRA-08**—TRA Cold Waste Disposal Pond
  - Fenced with access gate
  - Warning sign at gate with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"

- **TRA-13**—TRA Sewage Leach Ponds—Sewage Leach Pond Soil Contamination Area
  - 12 Aluminum signs 0.5 by 0.6 m (1.5 by 2 ft) with "INEEL OU 2-13 WAG 2, Sewage Leach Pond, KEEP OUT"
  - Brass corner markers
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"
  - "Caution Underground Radioactive Materials" signs at multiple locations

- **TRA-15**—TRA Hot Waste Tanks 2, 3, and 4 at TRA-613
  - "Caution RAD Area" sign posted at multiple locations
  - Area is fenced
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"

- **TRA-19**—TRA Rad Tanks 1 and 4 at TRA-630
  - Tanks under a Locked Controlled Building
  - "Caution RAD Area" sign posted at multiple locations
  - Warning sign with the following is located inside of TRA-630 building:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"
- **TRA-34**—TRA North Storage Area
  - Area roped off
  - "Caution RAD Soil Contamination Area" signs
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"
- **TRA PCB Spill at TRA-619**
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"
- **TRA PCB Spill at TRA-626**
  - Area is roped off
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"
- **TRA PCB Spill at TRA-653**
  - Warning sign with the following:

  - Waste Site Number
  - Point of Contact with phone number
  - "Do Not Disturb"

- **TRA-X Hot Tree Site**
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"

- **TRA-Y Brass Cap Area**
  - Area is roped off
  - "Caution RAD Soil Contamination Area" signs posted at multiple locations
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"

- **Perched Water and Snake River Plain Aquifer Groundwater**.

  This site does not have signs as it underlies the entire TRA facility and immediate surrounding area. Groundwater monitoring is performed on a semi-annual basis at this site. This site has a restriction prohibiting the drilling of wells for the purpose of producing drinking water.

OU 2-14 Sites

- **TRA-56**—Abandoned Acid Line from TRA-631 to TRA-645
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"

- **TRA-57**—Abandoned Buried Diesel Fuel Line from TRA-727 and TRA-775 to ETR
  - Warning sign with the following:

  - Waste Site Number
  - Point of Contact with phone number
  - "Do Not Disturb"

- **TRA-58**—Abandoned Buried Fuel Oil Lines (4) from TRA-727 to TRA-609
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"
- **TRA-59**—Abandoned Buried Acid Line from TRA-631 to TRA-671
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"
- **TRA-60**—Fenced Area North of TRA-608
  - Area is fenced
  - Warning sign with the following:
    - Waste Site Number
    - Point of Contact with phone number
    - "Do Not Disturb"

Photographs for all OU 2-13 and OU 2-14 sites at which institutional controls and/or protective measures have been implemented are included in Appendix C.

4.1 Signs at Sites Requiring No Institutional Controls

On September 19, 2000, during a conference call with DOE-ID, EPA, and IDEQ, institutional control signs at the "No Action" sites (Table 4-1) at OU 2-13 were discussed (DOE-ID 2000a, Appendix F). A consensus was reached that signs not specifically required by the ROD or an institutional control plan may be removed from the no action sites located at the OU 2-13 TRA area, since there is no need for marking a site that poses no hazard to the public.

The no action sites that did not require institutional control as specified in the ESD to the OU 2-13 ROD were surveyed and photographed and included in the *Institutional Controls Annual Inspection Report for the Test Reactor Area, Operable Unit 2-13* (INEEL 2000). The signs were removed from all no action sites not requiring institutional controls at TRA.

Table 4-1. List of WAG 2 No Action sites requiring no institutional controls.

Operable Unit	Site Number	Site Name
None	TRA-10	TRA MTR Construction Excavation Pile
	TRA-23	TRA ETR Excavation Site Rubble Pile
	TRA-24	TRA Guardhouse Construction Rubble Pile
	TRA-25	TRA Sewer Plant Settling Pond Rubble Pile
	TRA-26	TRA Rubble Site by U.S. Geological Survey Observation Well
	TRA-27	TRA North Storage Area Rubble Pile
	TRA-28	TRA North (Landfill) Rubble Site
	TRA-29	TRA ATR Construction Rubble
	TRA-32	TRA West Road Rubble Pile
	TRA-33	TRA West Staging Area/Drainage Ditch Rubble Site
OU 2-01	TRA-02	TRA Paint Shop Ditch (TRA-606)
OU 2-02	TRA-14	TRA Inactive Gasoline Tank at TRA-605
	TRA-17	TRA Inactive Gasoline Tank at TRA-616
	TRA-18	TRA Inactive Gasoline Tank at TRA-619
	TRA-21	TRA Inactive Tank, North Side of MTR-643
	TRA-22	TRA Inactive Diesel Fuel Tank at ETR-648
OU 2-03	None	TRA-614 Oil Storage North (under building TRA-628)
	TRA-01	TRA Acid Spill Disposal Pit
	TRA-11	TRA French Drain at TRA-645
	TRA-12	TRA Fuel Oil Tank Spill (TRA-727B)
	TRA-20	TRA Brine Tank (TRA-731) at TRA-631
	TRA-40	TRA Tunnel French Drain (TRA-731)
OU 2-04	None	TRA-627 No. 5 Oil Spill
	None	TRA-670 Petroleum Product Spill
	None	TRA PW 13 Diesel Fuel Contamination
	TRA-09	TRA Spills at TRA Loading Dock (TRA-722)
OU 2-05	None	TRA-603/605 Tank
	TRA-16	TRA Inactive Radioactive Contaminated Tank at TRA-614
OU 2-06	TRA-30	TRA Beta Building Rubble Site
	TRA-31	TRA West Rubble Site
	TRA-35	TRA Rubble Site East of West Road near Beta Building Rubble Pile
OU 2-07	None	TRA-653 Chromium-Contaminated Soil
	TRA-36	TRA ETR Cooling Tower Basin (TRA-751)
	TRA-38	TRA ATR Cooling Tower (TRA-771)
	TRA-39	TRA MTR Cooling Tower North of TRA-607
OU 2-08	TRA-37	TRA MTR Canal in basement of TRA-603
OU 2-09	TRA-07	TRA Sewage Treatment Plant (TRA-624) and Sludge Pit (TRA-07)
OU 2-11	TRA-05	TRA Waste Disposal Well, Sampling Pit (764) and Sump (703)
OU 2-13	TRA-41	French Drain Site
	TRA-42	Diesel Unloading Pit
	None	ETR Stack Area

ATR = Advanced Test Reactor
ETR = Engineering Test Reactor
MTR = Materials Test Reactor

5. CONCLUSION

All inspections required by the ROD and ESD were performed and documented in accordance with the requirements presented in the O&M Plan. All inspections of the sites included in OU 2-13 and OU 2-14 were completed on June 25 and 26, 2002. In general, all institutional controls implemented at these sites are operating as expected and remain protective of human health and the environment. However, minor deficiencies were noted at three of the sites inspected. These deficiencies and recommendations for correction are included in the section below.

5.1 Deficiencies

During the completion of the required inspections of the twenty OU 2-13 and OU 2-14 sites in support of this report minor deficiencies were noted at three sites. These sites include TRA-03 (TRA Warm Waste Pond), TRA-06 (Chemical Waste Pond) and TRA-13 (Sewage Leach Pond / Soil Contamination Area). The noted deficiencies include the following:

TRA-03 – The surface of the Warm Waste Pond cap is dominated in the eastern-most and western-most portions by various weed species while desirable plant and grass species are sparse.

TRA-06 – The surface of the Chemical Waste Pond cap is dominated by various weed species and desirable plant and grass species are sparse.

TRA-13 – The results of the re-vegetation effort conducted in the Fall, 2001 do not appear to be successful. The surfaces of the Sewage Leach Pond/Soil Contamination Area are dominated by various weed species and desirable plant and grass species are sparse.

5.2 Recommendations

Activities associated with the re-vegetation efforts at CERCLA sites at the INEEL were evaluated in June 2001. Sites TRA-03, -06 and –13 were not included as part of this evaluation, but with the completion of these inspections these sites will be added to the summary report prepared for the other CERCLA sites. Re-vegetation activities have been included in the work planning for FY-03 and will be conducted in Fall 2003 when conditions are most favorable for successful germination of seed. These re-seeded areas will then be re-evaluated in Spring 2004.

6. REFERENCES

Bright, D. J., 2001, Lotus Note to John R. Giles, April 19.

DOE-ID, 1993, *Remedial Design and Remedial Action Guidance for the Idaho National Engineering Laboratory,* Department of Energy Idaho Operations Office, DOE/ID-12584-152, Revision 2.

DOE-ID, 1997a, *INEEL Comprehensive Facility and Land Use Plan,* Department of Energy Idaho Operations Office.

DOE-ID, 1997b, *Comprehensive Remedial Investigation/Feasibility Study (RI/FS) for the Test Reactor Area (TRA) Operable Unit (OU) 2-13 at the Idaho National Engineering and Environmental Laboratory*, Department of Energy Idaho Operations Office, DOE/ID-10531, Revision 0, February.

DOE-ID, 1997c, *Final Record of Decision (ROD) for Test Reactor Area (TRA) Operable Unit (OU) 2-13 at Idaho National Engineering and Environmental Laboratory (INEEL)*, Department of Energy Idaho Operations Office, DOE/ID-10586, Revision 0, December.

DOE-ID, 1998, *OU 2-13 Remedial Design/Remedial Action Work Plan*, Department of Energy Idaho Operations Office.

DOE-ID, 2000a, *Operations and Maintenance Plan for the Final Selected Remedies and Institutional Controls at Test Reactor Area, Operable Unit 2-13*, Department of Energy Idaho Operations Office, DOE/ID-10658, Revision 3, March.

DOE-ID, 2000b, *Remedial Action Report for the Test Reactor Area Operable Unit 2-13,* Department of Energy Idaho Operations Office, DOE/IS-10720, Revision 0, July.

DOE-ID, 2000c, *Explanation of Significant Differences (ESD) to the Record of Decision (ROD) for Test Reactor Area (TRA) Operable Unit (OU) 2-13*, Department of Energy Idaho Operations Office, DOE/ID-10744, Revision 0, May.

EPA, 1999, *Region 10 Policy on the Use of Institutional Controls at Federal Facilities*, May.

INEEL, 2000, *Institutional Controls Annual Inspection Report for the Test Reactor Area, Operable Unit 2-13*, Idaho National Engineering and Environmental Laboratory, INEEL/EXT-2000-01413, Revision 0, February.

INEEL, 2001, *Radiation Characterization and Profile Estimation at the Waste Area Group 2, Test Reactor Area, Warm Waste Pond and Sewage Leach Pond Boundary Area, OU 2-13, at the Idaho National Engineering and Environmental Laboratory*, Idaho National Engineering and Environmental Laboratory, Engineering Design File, EDF-ER-309, INEEL/EXT-01-00288, Revision 0, June.

Rood, S. M., G. A. Harris, and G. J. White, 1996, Background Dose Equivalent Rates and Surficial Soil Metal and Radionuclide Concentrations for Idaho National Engineering Laboratory, INEL-94/0250, Idaho National Engineering Laboratory, Revision 1, August.

Appendix A

Institutional Controls Inspection Report Questionnaire

Appendix A

Institutional Controls Inspection Report Questionnaire

DATE OF INSPECTION: 25-26 June 2002

1st INSPECTOR: John R. Giles
ORGANIZATION: BBWI Environmental Restoration
TITLE: WAG2 Project Support
TELEPHONE: 526-4158

2nd INSPECTOR: Joseph A. Landis
ORGANIZATION: BBWI Environmental Restoration
TITLE: WAG2 Project Support
TELEPHONE: 526-6311

GENERAL OU DESCRIPTION AND OPERATIONAL HISTORY: Provide a brief description of the operable unit and its operational history since the last inspection (or ROD signature if the first inspection). Summarize the ROD's institutional controls and land use assumptions. Take photographs of each site, identify the date, time, location, and compass orientation of each photograph in a photographic log. Also, provide a brief description of how INEEL is meeting the facility-wide institutional control requirements (use additional sheets as necessary).

The Idaho National Engineering and Environmental Laboratory (INEEL) is a government-owned/contractor operated facility managed by the DOE-ID (Figure 2-1) that is located 51 km (32 mi) west of Idaho Falls, Idaho. The INEEL encompasses portions of five Idaho counties: (1) Butte, (2) Jefferson, (3) Bonneville, (4) Clark, and (5) Bingham, occupying 2,305 km^2 (890 mi^2) of the northeastern portion of the Eastern Snake River Plain. The Test Reactor Area (TRA) was established in the early 1950s in the southwestern portion of the INEEL. The TRA has housed extensive facilities for studying the effects of radiation on materials, fuels, and equipment, including high neutron flux nuclear test reactors. Radioactive, unregulated, and Resource Conservation and Recovery Act (RCRA) hazardous wastes have been generated from scientific and engineering research projects conducted at TRA. Although extracted and treated, the disposed wastes still contained low-level radioactive and RCRA-hazardous solutions. As originally designed and installed in the early 1950s, two separate liquid waste streams were generated and discharged at TRA: (1) sanitary sewage and (2) all other liquid waste streams. Since the end of the cold war, many of the TRA facilities have been put on standby and scheduled either for eventual remediation or decommissioning and demolition (D&D).

GENERAL QUESTIONS

1. Has INEEL developed a comprehensive facility-wide approach for establishing, implementing, enforcing, and inspection of institutional controls at the facility? This approach will frequently include a Base Master Plan or a facility-wide land use plan, installation maps, a comprehensive permitting system, and other installation policies and orders.

   The INEEL Comprehensive Facilities and Land Use Plan (CFLUP) is used to track land use and includes installation maps. Internal procedures control work and land use.

2. Does the CFLUP (or equivalent) list all areas or locations covered by the OU 2-13 ROD that have institutional controls for protection of human health or the environment?

   The CFLUP lists all the areas in the OU 2-13 ROD that have institutional controls for protection of human health or the environment.

3. Do the applicable company work control procedures describe how and what entities and persons are covered by the Institutional Controls? If yes, list who is covered (e.g., contractors, employees, invitees) and describe the nature of the coverage.

Yes. ICs implemented at the OU 2-13 sites are inspected and maintained in accordance with the requirements presented in the approved Operation and Maintenance Plan for the Final Selected Remedies and Institutional Controls at Test Reactor Area, Operable Unit 2-13 dated March 2000. Additional Work Control Procedures associated with the performance of work with environmental aspects are contained in Department of Energy – Idaho Operations Office Plan (Environmental Surveillance Program Plan (PLN-720)).

Work control procedures cover all entities and persons including, but not limited to, employees, contractors, lessees, and visitors that access controlled release sites. All activities at TRA are conducted in accordance with the Integrated Safety Management System that has been implemented across the INEEL. This system is described in Program Description Documents PDD-1004, INEEL Integrated Safety Management System, and PDD-1005, Site Operations Manual. The integrated work control process is used to control all maintenance and construction activities at TRA; this process is described in Standard STD-101, Integrated Work Control Process. Numerous procedures have been developed under these programs to ensure that all activities at TRA are conducted safely and without impact to the environment.

4. Do procedures that control activities at the waste site address the following activities: future soil disturbance, routine and non-routine utility work, well placement and drilling, recreational activities, groundwater withdrawals, paving, training activities, construction, renovation work on structures; or other activities? Describe by type of site.

Yes. There are specific ER procedures for controlling all of these activities. These procedures are implemented as required by the program through notification that the specific activities are to be undertaken

5. Describe how the CFLUP serves as a tracking mechanism that identifies all land areas under restriction or control.

The information about all of the WAG 2 sites requiring institutional controls has been loaded into the database supporting the CFLUP. However, the CFLUP has not yet been modified to incorporate the information. When complete, the CFLUP will provide a picture of each site, surveyed coordinates of the sites, lists of the ICs required for the sites, and a contact name and phone number of the representative of the sites. The CFLUP is updated on an annual basis, unless changes to land usage or changes to ICs of the release sites occur. In these instances, the CFLUP will be updated within the year that the changes occurred.

6. Describe the process that is in place to promptly notify both EPA and the state prior to any anticipated change in land use designation, restriction, land users or activity for any institutional control required by a decision document. If yes, please describe.

The Operations and Maintenance Plan, Section 6, specifies the procedure by which the EPA and the state would be notified prior to any anticipated change in land use designation, restriction, land users, or activities for ICs specified for WAG 2, OU 2-13 sites. The Explanation of Significant Differences specifies the procedure for notification of the EPA and state for ICs specified for WAG 2, OU 2-14 sites. ICs will not be deleted or terminated unless the EPA and the state have concurred in the deletion or termination, based on the results of the 5-year remedy reviews

7. Has INEEL designated a point of contact for implementing, maintaining, and inspection of institutional controls? If yes, provide name, title and phone number?

   Yes. Bob James, WAG 2 Project Manager, (208) 526-5020. Currently, this information can be obtained by contacting the WCC at 526-1515.

8. Has DOE-ID obtained sufficient funding to institute and maintain institutional controls pursuant to Paragraph 28 of the Federal Facility Agreement and Consent Order? If no, describe what steps were taken to obtain sufficient funding.

   Yes, the DOE-ID has obtained sufficient funding to institute and maintain the required ICs at WAG 2, OU 2-13 and OU 2-14.

9. Has INEEL deleted or terminated any institutional control? If so describe the circumstances to include how the state and EPA were involved in the decision.

   During a conference call with the Agencies on September 19, 2000, it was agreed that the "No Action" sites in Table 4-1 of the OU 2-13 ROD do not require an institutional control sign and permission to remove these signs was granted. No ICs pertaining to the other WAG 2, OU 2-13 or OU 2-14 sites have been terminated or deleted.

10. Has INEEL transferred, sold or leased any property subject to institutional controls in OU 2-13 and/or OU 2-14? If yes, please describe to include dates of notification to state and EPA.

    No property subject to ICs in WAG 2, OU 2-13 and/or OU 2-14 has been transferred, sold, or leased at the time of this inspection.

11. Has INEEL transferred, sold or leased any other property? If yes, please describe to include dates of notification to state and EPA.

    No property associated with TRA has been transferred, sold, or leased at the time of this inspection.

12. Does INEEL have any plans in the next year to transfer, sell, or lease any properties?

    DOE-ID does not have any plans to transfer, sell, or lease any TRA properties during fiscal year 2002.

DEFICIENCIES:

Provide a description of any deficiencies and the efforts or measures that have been or will be taken to correct problems.

The CFLUP does not presently provide the required functions to serve as a tracking mechanism for land areas under restriction or control.

At the time of this inspection, no DOE-ID directive exists that restricts drilling into contaminated zones. A DOE-ID directive will be developed prior to the next inspection.

IMPROVEMENTS:

Describe any additional institutional control requirements that may be necessary due to unique circumstances observed during the visual inspection?

No additional IC requirements were identified during the inspection.

SITE [a] TRA #	ROD Land Use [b]	Current Land Use	Required Institutional Control (WS, CFLUP, P, L, W) [c]	Observed Institutional Controls (WS, CFLUP, P, L, W) [c]	ICs O&F (Y/N) [d]	Photo Numbers	Visual Inspection Comments
03	ZI, RC	ZI	WS, CFLUP, P, L	WS, CFLUP, P, L	Y	PN02274-1-14, 1-15 & 1-16	Restrict Occupational Access
06	ZI, U	ZI	WS, CFLUP, P, L	WS, CFLUP, P, L	Y	PN02274-1-6, 1-7, 1-8 & 1-9	Industrial Use
08	ZI, U	ZI	P, L	WS, CFLUP, P, L	Y	PN02274-1-17, 1-18 & 1-19	Industrial Use
13 & SCA	ZI, RC	ZI	WS, P, L	WS, CFLUP, P, L	Y	PN02274-1-2, 1-3, 1-4 & 1-5	Restrict Occupational Access
15	ZI, RC	ZI	WS, P, L	WS, CFLUP, P, L	Y	PN02274-2-4 & 2-5	Restrict Occupational Access
19	ZI, RC	ZI	WS, P, L	WS, CFLUP, P, L	Y	PN02274-2-6	Restrict Occupational Access and Prohibit Residential (sign is inside of TRA-630)
TRA-Y (Brass Cap Area)	ZI, RC	ZI	WS, P, L	WS, CFLUP, P, L	Y	PN02274-2-0 & 2-1	Restrict Occupational Access and Prohibit Residential
619	ZI	ZI	P, L	WS, CFLUP, P, L	Y	PN02274-2-13	Industrial Use
626	ZI	ZI	P,L	WS, CFLUP, P, L	Y	PN02274-2-7 & 2-8	Industrial Use
653	ZI	ZI	P,L	WS, CFLUP, P, L	Y	PN02274-1-23	Industrial Use
04	ZI	ZI	P, L	WS, CFLUP, P, L	Y	PN02274-2-3 & 2-4	Industrial Use Only < 10 ft
34	ZI,	ZI	P, L	WS, CFLUP, P, L	Y	PN02274-1-11, 1-12 & 1-13	Industrial Use
TRA-X (Hot tree site)	ZI	ZI	P, L	WS, CFLUP, P, L	Y	PN02274-1-22	Industrial Use For Approximately 30 Years
Ground water			W, CFLUP, P, L	CFLUP, P, L	Y	N/A	Groundwater Monitoring is Performed Semiannually
56	N/A	SI	WS, P, L, W	WS, CFLUP, W	Y	PN02274-2-14	Industrial Use
57	N/A	SI	WS, P, L, W	WS, CFLUP, W	Y	PN02274-2-9	Industrial Use
58	N/A	SI	WS, P, L, W	WS, CFLUP, W	Y	PN02274-2-9	Industrial Use
59	N/A	SI	WS, P, L, W	WS, CFLUP, W	Y	PN02274-2-15	Industrial Use
60	N/A	SI	WS, P, L, W	WS, CFLUP, W	Y	PN02274-2-10 & 2-11	Industrial Use

a. See OU 2-13 ROD or subsequent decision document for site description. Does not include "No Action" sites.

b. Describe land use, unrestricted (U), structures-industrial (SI), zoned industrial (ZI), grazing (G), radiologically controlled (RC), etc. Explain in comments.

c. WS = warning signs, CFLUP = INEEL Comprehensive Facility and Land Use Plan, NA = no action, P = property transfer restrictions, L = lease restrictions, W = well drilling restrictions

d. O&F = Is the institutional control required in ROD operational and functional (e.g., signs posted)?

Appendix B

In-Situ Measurement Warm Waste Pond Radiological Monitoring Data

TRA WARM WASTE POND AREA 5.2002 MEASUREMENTS

SHORT COUNT RESULTS

POINT	East	North	LIVEETIME SEC	SUM	GROSS CPS	CPS RATIO	Cs-137 pCi/g	NETCT	662 kev cps	1sigma%	Cs-134 pCi/g	NETCT	604 kev cps	1sigma%	Ag-108m pCi/g	NETCT	722 kev cps	1sigma%
WWP2-C	289960	700269	578.0	505888.0	875.2		0.080	253.0	0.4	11.0	0.030	9.0	0.0	na	0.020	30.0	0.1	48.1
WWP3-C	289960	700217	573.8	676468.0	1178.9		0.170	224.0	0.4	18.0	0.020	23.0	0.0	99.0	0.060	6.0	0.0	NA
WWP4-C	289960	700164	570.8	749109.0	1312.4		0.220	1712.0	3.0	16.0	0.060	76.0	0.1	94.0	0.060	30.0	0.1	35.0
WWP5-C	289960	700111	568.7	771803.0	1357.1		0.110	1109.0	2.0	NA	0.050	89.0	0.2	NA	0.060	11.0	0.0	NA
WWP6-C	289946	700058	565.3	854907.0	1512.3		0.410	536.0	0.9	15.4	0.020	34.0	0.1	84.0	0.065	231.0	0.4	NA
WWP7-C	289946	700006	565.8	857169.0	1515.0		0.110	742.0	1.3	28.7	0.030	85.0	0.2	NA	0.070	338.0	0.6	NA
WWP8-C	289946	699953	565.8	876256.0	1548.7		0.780	1023.0	1.8	10.8	0.022	89.0	0.2	86.0	0.070	84.0	0.1	NA
WWP9-C	289946	699900	533.3	867686.0	1627.0		0.370	511.0	1.0	15.0	0.080	14.0	0.0	NA	0.070	133.0	0.2	NA
WWP10-C	289946	699848	564.5	863441.0	1529.6		0.580	761.0	1.3	11.8	0.050	74.0	0.1	74.0	0.033	79.0	0.1	64.0
WWP11-C	289946	699795	571.9	726046.0	1269.5		0.100	137.0	0.2	30.0	0.060	ND	NA		0.070	360.0	0.6	NA
				MEAN-C	1372.6													
				SDEV-C	226.0													
WWP2-UC	289960	700269	493.9	2580000.0	5223.7	6.0	0.840	966.0	2.0	11.7	0.030	43.0	0.1	92.0	0.050	61.0	0.1	40.0
WWP3-UC	289960	700217	463.0	2920000.0	6306.7	5.3	0.360	1807.0	3.9	14.0	0.130	123.0	0.3	NA	0.050	9.0	0.0	41.0
WWP4-UC	289960	700164	460.5	3240000.0	7036.4	5.4	0.920	3688.0	8.0	7.1	0.090	114.0	0.2	NA	0.110	24.0	0.1	NA
WWP5-UC	289960	700111	454.4	3370000.0	7416.0	5.5	0.200	2171.0	4.8	NA	0.070	93.0	0.2	85.0	0.120	90.0	0.2	27.0
WWP6-UC	289946	700058	439.1	3670000.0	8358.0	5.5	0.580	1771.0	4.0	10.0	0.150	138.0	64.0	88.0	0.720	15.0	0.0	15.0
WWP7-UC	289946	700006	443.7	3590000.0	8091.1	5.3	0.230	1370.0	3.1	12.0	0.050	65.0	0.1	92.0	0.140	141.0	0.3	NA
WWP8-UC	289946	699953	440.6	3610000.0	8193.4	5.3	0.220	2299.0	5.2	NA	0.130	291.0	0.7	53.0	0.150	150.0	0.3	NA
WWP9-UC	289946	699900	444.3	3590000.0	8080.1	5.0	0.210	1036.0	2.3	NA	0.110	17.0	0.0	NA	0.360	309.0	0.7	31.0
WWP10-UC	289946	699848	449.9	3470000.0	7712.8	5.0	1.400	1620.0	3.6	10.0	0.070	163.0	0.4	NA	0.040	380.0	0.8	90.0
WWP11-UC	289946	699795	464.0	3160000.0	6810.3	5.4	0.410	540.0	1.2	21.0	0.140	450.0	1.0	NA	0.050	13.0	0.0	79.0
				MEAN-UC	7322.9													
				SDEV-UC	996.5													
				RATIO UC/C														

LONG COUNT RESULTS

WWP8-C-L		6681.0	10470000.0	1567.1		0.300	12507.0	1.9	6.3	0.010	220.0		70.0	0.030	ND		NA
WWP8-UC-L		5371.0	40610000.0	7561.0		0.140	527.0	0.1	40.0	0.680	9914.0		8.0	0.050	1047.0		NA
			RATIO UC/C														
WWP9-C-L		5064.0	7807000.0	1541.7		0.340	4053.0	0.8	14.0	0.030	497.0		59.0	0.140	1717.0		36.0
WWP9-UC-L		3886.5	31670000.0	8148.7		1.200	11014.0	2.8	8.0	0.470		NA	NA	0.070	2035.0		9.7
			RATIO UC/C														

NOTES:

1. ALL COLIMATED COUNTS AT 1 METER W/ 1-INCH RECESS
2. ALL COUNTS WITH 65% NTTYPE HPGE
3. RATIO OF UNCOLLIMATED/COLLIMATED IS CONSISTENT FOR LONG AND SHORT COUNTS
4. RATIO OF CO-60 CONCENTRATIONS IS CONSISTENT FOR LONG AND SHORT COUNTS
5. RATIO OF CS-137 CONCENTRATIONS IS NOT CONSISTENT FOR LONG AND SHORT COUNTS
6. SPATIAL DISTRIBUTION OF COUNT RATE DATA IS CONSISTENT WITH THE DISTRIBUTION SEEN IN 2001. THE COUNT RATES ARE LARGELY DRIVEN BY CO-60,BKD,COMPTON
7. BLUE VALUES ARE DETECTION LIMIT (VIA CURRIE) VALUES. ALL OTHER COLORS ARE FOR EASE OF COMPARISON (COMPARE DATA OF LIKE COLORS FOR CO-60)

TRA WARM WASTE POND AREA 5.2002 MEASUREMENTS

SHORT COUNT RESULTS

POINT	Am-241 pCi/g	NETCT	59.5 keV cps	1sigma%	Eu-152 pCi/g	NETCT	344 kev cps	1sigma%	Eu-154 pCi/g	NETCT	1274 kev cps	1sigma%	Eu-155 pCi/g	NETCT	105 kev cps	1sigma%	Co-60 pCi/g	NETCT	1332 kev cps	1sigma%	Ir-192 pCi/g	NETCT	317 kev cps	1sigma%
WWP2-C	0.420	235.0	0.4	NA	0.130	58.0	0.1	78.1	0.060	160.0	0.3	46.0	0.390	152.0	0.3	77.0	0.520	844.0	1.5	4.1	0.060	80.0	0.1	53.0
WWP3-C	0.380	221.0	0.4	51.0	0.150	0.0	0.0	NA	0.210	405.0	0.7	73.0	0.360	140.0	0.2	89.0	3.300	5684.0	9.9	1.5	0.060	39.0	0.1	83.0
WWP4-C	0.390	107.0	0.2	74.0	0.280	45.0	0.1	40.0	0.430	244.0	0.4	15.7	0.800	106.0	0.2	45.0	3.650	6213.0	10.9	1.8	0.030	46.0	0.1	88.0
WWP5-C	0.610	85.0	0.1	NA	0.210	20.0	0.0	NA	0.530	282.0	0.5	14.8	0.810	236.0	0.4	NA	4.250	6774.0	11.9	1.5	0.350	31.0	0.1	82.0
WWP6-C	0.069	86.0	0.2	NA	0.170	56.0	0.1	NA	1.100	579.0	1.0	10.1	0.300	113.0	0.2	99.0	3.430	7943.0	14.1	1.4	0.070	82.0	0.1	NA
WWP7-C	0.820	149.0	0.3	NA	0.260	126.0	0.2	53.0	0.130	640.0	1.1	NA	1.100	144.0	0.3	NA	3.790	6144.0	10.9	1.7	0.090	122.0	0.2	80.0
WWP8-C	0.900	110.0	0.2	NA	0.300	118.0	0.2	60.0	1.420	753.0	1.3	10.0	0.550	212.0	0.4	74.0	4.000	7411.0	13.1	1.5	0.071	99.0	0.2	77.0
WWP9-C	0.430	209.0	0.4	73.0	0.270	0.0	0.0		0.130	238.0	0.4	14.0	1.110	0.0	0.0	NA	4.900	8255.0	15.5	1.5	0.110	195.0	0.4	65.0
WWP10-C	0.340	187.0	0.3	89.0	0.110	80.0	0.1	63.0	0.150	362.0	0.6	NA	0.560	318.0	0.6		4.740	8085.0	14.3	1.4	0.080	39.0	0.1	64.0
WWP11-C	0.380	208.0	0.4	84.0	0.280	36.0	0.1	NA	0.880	501.0	0.9	9.5	1.100	110.0	0.2	NA	3.300	5712.0	10.0	1.7	0.120	183.0	0.3	46.0
																		MEAN-C	11.2					
																		SDEV-C	3.9					
WWP2-UC	1.050	501.0	1.0	96.0	0.210	119.0	0.2	88.0	0.650	288.0	0.6	19.90	1.200	404.0	0.8	76.0	1.480	1999.0	4.0	3.1	0.120	134.0	0.3	NA
WWP3-UC	58.000	829.0	1.8	78.0	1.000	361.0	36.0	51.0	2.240	889.0	1.9	7.5	2.200	2.2	0.0	NA	1.080	13839.0	29.9	1.1	0.050	155.0	0.3	82.0
WWP4-UC	1.700	82.0	0.2	NA	0.830	379.0	0.8	50.0	1.410	643.0	1.4	17.0	2.200	263.0	0.6	NA	1.200	15693.0	34.1	0.9	0.150	158.0	0.3	87.0
WWP5-UC	2.400	287.0	0.6	NA	0.950	573.0	1.3	48.0	0.200	309.0	0.7	NA	2.100	340.0	0.7	NA	13.300	17011.0	37.4	0.9	0.140	377.0	0.8	89.0
WWP6-UC	2.800	350.0	0.8	NA	1.000	481.0	1.1	51.0	0.220	321.0	0.7	NA	2.300	260.0	0.6	71.0	15.500	18896.0	43.0	0.9	0.130	198.0	0.5	90.0
WWP7-UC	1.800	518.0	1.2	NA	1.500	1064.0	2.4	31.0	1.000	1610.0	3.6	12.0	1.260	245.0	0.6	75.0	12.500	15459.0	34.8	1.0	0.300	416.0	0.9	NA
WWP8-UC	1.850	783.0	1.8	77.0	1.500	569.0	1.3	32.0	4.000	1769.0	4.0	5.1	2.900	730.0	1.7	NA	11.600	17641.0	40.0	0.9	0.090	349.0	0.8	94.0
WWP9-UC	2.300	145.0	0.3	NA	1.450	243.0	0.5	35.0	1.300	590.0	1.3	10.8	1.500	500.0	1.1	80.0	16.600	20725.0	46.6	0.8	0.140	416.0	0.9	90.0
WWP10-UC	2.500	0.0	0.0	48.0	0.980	323.0	0.7	38.0	0.220	261.0	0.6	NA	0.280	500.0	1.1	NA	14.700	18891.0	42.0	0.9	0.120	109.0	0.2	88.0
WWP11-UC	1.700	0.0	0.0	55.0	0.960	0.0	0.0	38.0	0.320	1052.0	2.3	19.0	2.000	633.0	1.4	73.0	10.100	13430.0	28.9	1.1	0.070	78.0	0.2	94.0
																		MEAN-UC	34.1					
																		SDEV-UC	12.0					
																		RATIO UC/C	3.0					

LONG COUNT RESULTS

WWP8-C-L	0.730	4694.0		47.0	0.060	323.0		59.0	0.470	3099.0		2.3	0.300	1382.0		93.0	4.350	84612.0		0.4	0.100	948.0		52.0
WWP8-UC-L	3.400	17619.0		20.0	0.270	7953.0		7.9	3.100	16649.0		1.0	0.900	ND	NA	NA	12.200	187979.0		0.3	0.050	716.0		57.0
WWP9-C-L	0.380	ND	NA	NA	0.110	417.0		64.0	0.430	2175.0		3.6	0.550	1896.0		51.0	4.830	72596.0		0.6	0.020	232.0		87.0
WWP9-UC-L	0.070	ND	NA	NA	0.450	1364.0		73.0	1.200	4634.0		2.4	0.950	ND	NA	NA	15.600	169883.0		0.8	0.180	1744.0		41.0

NOTES:

1. ALL COLIMATED COUNTS AT 1 METER W/ 1-INCH RECESS
2. ALL COUNTS WITH 65% NTTYPE HPGE
3. RATIO OF UNCOLLIMATED:COLLIMATED IS CONSISTENT FOR LONG AND SHORT COUNTS
4. RATIO OF CO-60 CONCENTRATIONS IS CONSISTENT FOR LONG AND SHORT COUNTS
5. RATIO OF CS-137 CONCENTRATIONS IS NOT CONSISTENT FOR LONG AND SHORT COUNTS
6. SPATIAL DISTRIBUTION OF COUNT RATE DATA IS CONSISTENT WITH THE DISTRIBUTION SEEN IN 2001. THE COUNT RATES ARE LARGELY DRIVEN BY CO-60,BKD,COMPTON
7. BLUE VALUES ARE DETECTION LIMIT (VIA CURRIE) VALUES. ALL OTHER COLORS ARE FOR EASE OF COMPARISON (COMPARE DATA OF LIKE COLORS FOR CO-60)